

**FINAL REPORT
HOUSEHOLD HAZARDOUS WASTE COLLECTION FACILITY
INTEGRATED PEST MANAGEMENT DEMONSTRATION GARDEN ENHANCEMENTS
AND PUBLIC EDUCATION PARTNERSHIP
MAY 1998**

GRANTEE

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Project consultants

Michael Baefsky, Baefsky & Associates (IPM training and materials)
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PROJECT TITLE

Household Hazardous Waste Collection Facility Integrated Pest Management
Demonstration Garden Enhancements and Public Education Partnership

BACKGROUND

CCCSD became aware of the need to reduce toxic pesticides entering the sewer system when it discovered that organophosphate pesticides (diazinon and chlorpyrifos) in its treated wastewater were killing a test organism, *Ceriodaphnia dubia*. Other research has shown that diazinon and chlorpyrifos has been found in the San Francisco Bay and creeks throughout the region. During storm events, concentrations are often high enough to be toxic to some species of aquatic life.

The Bay Area Urban Pesticide Committee, comprised of key stakeholders, concluded that the environmental threat from pesticide use warrants a widespread public outreach program, and drafted a pesticide education plan. This project incorporated elements of that plan. It was meant as a pilot project and model for other agencies or groups interested in reducing the risks associated with pesticides, promoting Integrated Pest Management (IPM) and the water quality/pesticide linkage.

SUMMARY

Overview

The project is a broad-based community effort to increase awareness that pesticide use can affect water quality and to reduce the risks of pesticide use by the general public. The project promotes Integrated Pest Management (IPM) tactics as a way to manage pests while protecting water quality and also promotes proper use and disposal of pesticides to reduce risks associated with pesticide use. The project consists of four key components:

1. An IPM demonstration garden and other IPM education tools at CCCSD's household hazardous waste collection facility.
2. IPM Partnership with stores/nurseries. Participating stores agreed to stock and promote less-toxic (IPM) products and track product sales. Employees received training on the water quality/pesticide linkage and use of recommended IPM products. In addition, stores agreed to host public workshops and were featured in advertising as resources for IPM products and advice.
3. IPM Partnership with the University of California Cooperative Extension (UCCE) Master Gardeners. The UCCE Master Gardeners were given training in IPM and in how to lead Healthy Home and Garden Workshops featuring Less-Toxic Pest Management for the general public. The Master Gardeners lead workshops and provided IPM information to the public over the phone and at other events in which they participate.
4. A communication element to maximize the value of the project to other groups and agencies.

The accomplishments in each of these areas are summarized below by subheading.

IPM Demonstration Garden

CCCSD:

- Planted an IPM demonstration garden on 1/3 of an acre adjacent to its household hazardous waste collection facility. (Garden photos are attached. Garden design and installation occurred independently of this grant; the grant helped fund signage.)
- Produced and installed interpretive signs for the garden to explain IPM principles. (Photos of example signage are included in the attachments.)
- Installed plant identification signs.
- Prepared the content for a Garden Tour brochure which will be produced by CCCSD and placed in weatherproof holders in the garden.

- Held an open house for the household hazardous waste collection facility and IPM Garden on October 24, 1997.
- Produced and installed an IPM garden story board as part of the household hazardous waste collection facility information kiosk.
- Included the garden in tours of the household hazardous waste facility and encouraged facility users to visit the gardens.

IPM Partnership with Stores/Nurseries

Store recruitment, input, and recognition

CCCSD, Palo Alto, and project consultants:

- Identified four store owners interested in joining the partnership: Navlet's Nursery and Garden Center, Diablo Nursery Garden Center, Ace Hardware in Concord, and Ace Hardware in Palo Alto. Also identified two wholesalers interested in providing project input.
- Met with team members, store owners, and product wholesalers in July 1997 and November 1997 to obtain store owner input on the overall project, including project advertising/store displays.
- Publicized participating stores through CCCSD's newsletter, which is mailed to all 130,000 residential and business locations in its service area, and awarded the stores the CCCSD Pollution Prevention Award.

Store training, IPM product information

The project team:

- Evaluated and prepared a list of less-toxic pest management products, including products to replace diazinon and chlorpyrifos for managing ants, aphids, fleas, and white grubs. Identified diazinon and chlorpyrifos products as well as less-toxic alternatives, so that we can track product sales over the spring and summer.
- Asked participating stores to carry as many of the alternative products as possible and to track product sales.
- Held two, two-hour training sessions at each of the participating stores to train employees about water quality risks associated with pesticide use and about less-toxic, IPM products. Developed and distributed a notebook of written information to supplement the training sessions and to serve as reference materials at the stores. Store employee training notebooks include background information about water quality and pesticides, information on IPM treatment options, fact sheets on four key pests and the project booklet, fact sheets on IPM products, information about how pesticide toxicity is measured, IPM product lists, and the EPA notice regarding pesticide tolerance reassessment. (The store training curriculum is included in the attachments.)
- Provided stores with reference materials to help them steer customers to less-toxic pest management products. These included two publications: Pests of the Garden and Small Farm by Mary Louise Flint and Pests of Landscape Trees and Shrubs by Steve H. Dreistadt.

Store displays and related materials

The project team:

- Produced four fact sheets—one for each of four target pests for which organophosphate pesticides are most commonly used in the Bay Area. Provided fact sheets to the stores for display/distribution to the public, starting in March 1998. (Fact sheets are included among the attachments.)
- Produced a booklet with more detailed information than the four fact sheets. In March 1998, provided the booklet to participating stores for distribution to interested customers. Gave the booklet to those attending the public IPM workshops (see the IPM Partnership with Master Gardeners).
- Designed and produced a store end cap/signage featuring IPM products and information. The key messages are as follows: "Our Water, Our World. Choose less toxic products for your home and garden. What you use around your home ends up in our home. Look for the Our Water/Our World symbol before you buy."
- Produced T-shirts which store employees can wear with the message "Ask me about less-toxic products for your home and garden."
- Produced stand-up figures (turtles) to advertise the workshop schedule.
- Installed store displays in March 1998. (Photos of displays are attached.)
- Designed and produced shelf talkers, which were placed on shelves next to IPM products at participating stores in March 1998.

IPM Partnership with Master Gardeners

Master Gardener recruitment and training

CCCSD and project consultants:

- Obtained Master Gardener input (through two Master Gardener representatives) on all facets of the IPM partnership program.
- Recruited ten Master Gardeners to participate in the program.
- Held two dry-run public workshops to obtain feedback for the Master Gardener training curriculum.
- Trained ten Master Gardeners about IPM and how to lead public IPM workshops through four, three-hour training sessions in March 1998. The training covered the following topics: why CCCSD is concerned about pesticides, a review of IPM, biology/ecology of the four key pests (for which organophosphate pesticides are commonly used) and selected additional pests, biology/ecology of beneficial insects, IPM products, and what Master Gardeners should cover in the public workshops. In addition, the training included homework and in-class exercises, including having the Master Gardeners give practice presentations for the public workshops.
- Prepared and distributed training notebooks to supplement the training sessions. The Master Gardener training notebooks and handouts contained information on water quality and pesticides; information on IPM treatment options; fact sheets on pests, beneficial insects, and plants that attract beneficial insects; the project booklet; fact sheets on IPM products; information about how pesticide toxicity is measured and how to read a pesticide label; IPM products lists; the EPA notice regarding pesticide tolerance reassessment, and University of California Pest Notes. (See the enclosed training notebook.)

Public workshops

CCCSD and project consultants:

- Organized a series of workshops for the general public (called Healthy Home and Garden Workshops: Less-Toxic Pest Management), in coordination with host stores and the Master Gardeners. Public workshops have been scheduled from April through July, 1998.
- Assembled boxes of materials for the Master Gardeners to take to workshops. The boxes contain all the materials needed to give the workshops, including sample IPM products, photos of the target pests, project fact sheets and booklet, and related hand-outs (such as a flyer on where the household hazardous waste collection facility is located).
- Produced 5,000 flyers describing the workshop and listing workshop dates. Distributed them at participating stores, CCCSD's booth at the Contra Costa Earth Day Event (April 26th, 1998), at flower sales, and other events and locations.
- Also publicized the public workshops through calendar listings in local newspapers and City newsletters.

Communication Element

The project elements previously described are a community outreach effort.

To facilitate similar educational projects by other groups and agencies, CCCSD:

- Participated in monthly meetings of the Urban Pesticide Committee to keep members informed about the project and to solicit input.
- Gave two presentations about the project at the fall 1997 West Coast Water Pollution Prevention Symposium. The sessions were attended by about 40 mostly Bay Area Water agency staff.
- Gave a presentation about the project at the U.S. EPA Pesticide Environmental Stewardship Program workshop in Davis, California.
- Gave project presentations to the CCCSD Board, local stormwater agencies, and the Bay Area Pollution Prevention Group.
- Sent minutes of project team meetings and project materials to staff of several agencies and organizations, including U.S. EPA, Marin County STOPP, the City of Richmond, San Francisco Water Pollution Prevention Program, the City of Sacramento Dept. of Utilities, the Aquatic Outreach Institute, and the City of Palo Alto.

In addition, the Bio-Integral Resource Center (BIRC), a project consultant and nationally known resource for IPM information, has told a number of people from throughout the U.S. about the project. BIRC's Tanya Drlik spoke about the project at a 1998 conference called "Beyond Pesticides: Empowering Communities for Change."

Finally, once the currently-scheduled public workshops are completed, CCCSD will prepare a "How-to" booklet for use by other agencies. The "How-to" booklet will be adapted from this final report and will include an updated evaluation of the project.

RESULTS AND DISCUSSION

The project objectives were to:

1. Encourage the use of IPM techniques by the general public and thereby reduce the risk associated with pesticide use. This will enhance local water quality, decrease disposal costs of unwanted pesticides, and help protect public health and the environment. (Originally, the first sentence of this objective referred to reducing the use of pesticides rather than to reducing the risks associated with pesticide use.)
2. Share the information learned from this project with others so that the results of the project may serve as a model for broader adoption.

Results/Discussion with respect to first objective

Extent to which objective was met, specific results

The project conveys the water quality/pesticide linkage and the reduced risks of pesticide use through:

- displays at participating stores;
- training store employees who, in turn, can steer customers to less-toxic products; and
- training ten Master Gardeners who will convey IPM information to the public over the phone, at special events, and at Healthy Home and Garden Workshops featuring Less-Toxic Pest Management.

The store displays are effective. The end-cap displays are highly visible; they draw the link between pesticide use and water quality and quickly convey the overall message to "Choose less-toxic products." More specific information is provided through product displays next to the posters (which have changeable headings such as "Got Ants?" and through fact sheets, shelf talkers, and a comprehensive booklet. A stand-up turtle is also used to reinforce the messages and advertise the workshops.

It will be difficult to obtain data on the number of people who see the store displays. However, the Concord Ace Hardware store, the largest of the participating stores in CCCSD's service area, estimates they have about 1500 customers on a busy Saturday.

The store employee training went well. A total of 40 store employees were trained at four participating stores (three additional Ace Hardware stores under the same ownership as the Concord Ace Hardware store). The employees gave high marks to the training they received. The comment section of the evaluation forms included remarks such as:

- "Great class. Good information for experienced people or newcomers."
- "Would not change a thing. I hope you offer more of these classes."
- "This has been an exceptional class. I have learned a lot about things I didn't know—this will (in time) help our environment."

Since the general public buys pest-control products at stores and nurseries and turns to store employees for advice, the stores play an essential role in influencing public pest-management decisions. As the project intended, participating stores can now steer customers toward less-toxic products. For example, as noted by a store employee in the evaluation form for the second of two training sessions, "In the past week I've helped seven different customers with problems about pests. I've also used the information in my own home."

Like the store employee training, the Master Gardener training went well. The evaluation forms were all very positive with comments such as "Great job" and "Great program."

The Master Gardeners are now conveying what they learned to the general public, including by teaching workshops on less-toxic pest management. The workshops, scheduled at participating stores for the spring and summer of 1998, are just getting underway. So far, we have received the evaluation forms from just one workshop, but the comments were very encouraging. Participants rated the workshop highly. Most importantly, participants answered "yes" to the question: "Do you expect to change your pest-management strategies (for example seeking to prevent pests, tolerating more of a pest, trying non-chemical options, or finding the least-toxic chemical that will do the job)?"

We don't yet know to what extent participating stores will experience a shift in pest-related product sales from more-toxic to less-toxic products. This data will be obtained at the end of the summer once the displays and workshops have had more time to make a difference. Of the participating stores in CCCSD's service area, Ace Hardware in Concord has the best system for tracking product sales. They have a computerized tracking system for all their product sales. Navlet's tracks products through their purchase rather than sales records. Diablo Nursery evaluates its inventory at the end of each summer.

It is too early to quantify environmental benefits from the program. CCCSD recognizes that shifting community norms and behavior requires an on-going outreach effort. This pilot project represents an important start, and CCCSD is committed to continuing and expanding the program.

Difficulties encountered

Several difficulties/challenges exist with respect to the IPM partnership with stores. The following were encountered regarding store employee training:

- The training was conducted on-site, in variable learning environments. The facility at Ace Hardware, a classroom setting, worked best. In contrast, training at both nurseries took place in an unheated area, and it was cold during the February, early morning training. Holding training sessions off-site would ensure an optimum learning environment. In addition, employees from more than one store could be trained at once, saving costs. We suggest that attendance at a training session be limited to 20 or 25 people at most, to allow for individual questions.

- The overall message to “choose less-toxic products” is a simple one, but it is not so simple to convey what less-toxic products to use on what pest at what time. As a result, the store employee training was detailed, and we don’t have control over what information the employees will retain. The reference materials and continued training help.
- The store employees expressed an interest in learning about pest-management strategies for additional pests besides the four targeted ones and also expressed an interest in longer and/or additional training sessions. However, we concluded that the focus on a limited number of pests was right for this pilot project, since too many topics dilute the effort. This project targets four key pests and is a beginning tool for general public education about IPM.
- There is often a high turnover among retail employees, so there needs to be an on-going employee training tool. A training video would be helpful and we are planning to produce one.
- Some store employees thought it may be hard to convince customers to use alternatives that often cost more up front and take longer to work. IPM does not provide the same “instant gratification” as applying toxic pesticides.

We also faced a few difficulties with the store display materials, reference materials, and IPM product purchase and labeling:

- The fact sheets are an excellent reference guide for the four target pests. However, we were unable to find an IPM reference book that could stand alone as an alternative to the “Ortho Problem Solver” (found in most hardware stores and nurseries) for pest identification and less-toxic pest management. We provided the stores with several references, but the lack of one, straightforward reference complicates quickly finding a simple answer to many pest management questions.
- The nurseries in the pilot program did not purchase as many of the IPM products as we had hoped (but the Concord Ace Hardware provided a comprehensive selection). The nurseries were not interested in carrying flea products.
- Beneficial insects are part of the recommended IPM tactics. One nematode product we considered was found to have no live nematodes. Enhancing the public availability of viable biological controls is an area which needs to be addressed.
- CCCSD planned to apply “our water, our world” stickers to IPM products. However, this was not done because of a potential legal issue: applying stickers may amount to modifying the pesticide label, which may be a concern with regulatory agencies. We have asked an attorney for input and will be seeking clarification of this point with the proper agencies.
- Some store displays (in a nursery, where moisture is a problem) were replaced with waterproof materials, because their edges had curled.
- On the positive side, we can use the store displays for other products such as alternative cleaning products. The pest-specific signs (such as “Got Ants?”) are removable, and the general message “Choose less-toxic products for your home and garden” applies to many product categories.

We think we avoided other difficulties with the store IPM partnerships by involving the store owners early on. We held a luncheon to explain the project and get early feedback; that process was very successful; it ensured that the stores had bought into the project approach and could sell the idea to their employees and the general public.

The pilot IPM partnership with stores focused on locally-owned stores. Chain stores may require more lead time to develop relationships and buy-in. Also, the smaller, independent stores want to set themselves apart from large chain stores, and this may necessitate a different approach with the large stores.

The public workshops led by Master Gardeners are another important way to disseminate IPM information to the public. Difficulties/challenges with the workshops so far include the following:

- The stores hosting workshops agreed to set up tables and chairs for the workshop, but different stores have shown different degrees of follow through. For example, when Master Gardeners arrived at one store, everything was set up, including coffee and donuts. In contrast, no set-up had begun at another store. A CCCSD employee was there to prompt the store owner to put chairs out and everything worked fine. It's important to assign someone to the first workshop at each store to ensure proper set-up.
- A few workshop participants had trouble finding the workshop location within the store. In the future, we plan to have the Master Gardener teaching the workshop set up a sign (on an easel) that notes the workshop location. The Master Gardener needs to remind the store owners to tell all employees when and where the workshop is held.
- We discovered that it takes some time to get the message out about the workshops. Two of the first four workshops were canceled due to inadequate response (pre-registration was required), but public response has since increased. In addition, we recently decided to change the RSVP language on workshop publicity from "registration required" to "Registration requested but not required. Drop-ins welcome if space permits." That way we'll still have an indication of how many people to expect (and therefore how many chairs to set up), but will accommodate those who don't plan ahead. Unless we start having more participants than the workshop facility can accommodate, an RSVP is not essential.

Pest management results, progress in community involvement

The most important pest-management result is the creation of clear fact sheets on how to manage ants, aphids, fleas, and white grubs in a less-toxic way and the dissemination of this information through participating stores and Master Gardeners.

Progress was made in community involvement through training ten Master Gardeners, training store employees, and setting up displays at participating stores. Store employees and Master Gardeners both have extensive contact with the public. With increased workshop publicity over time, we expect the workshops to be a great forum for educating the public about IPM and water quality.

Results/Discussion with respect to second objective

Extent to which objective was met/specific results

As discussed in the project summary, CCCSD has shared information about the project with various groups and agencies—particularly those in the Bay Area. The result has been substantial interest among several Bay Area agencies to implement an IPM Partnership program with stores on a regional level. The Bay Area Stormwater Management Agencies Association and the Bay Area Pollution Prevention Group have both identified funds to do so. Several local agencies may also earmark funds for an IPM Partnership program.

Difficulties encountered

CCCSD solicited input from others through the Urban Pesticide Committee. While obtaining input is useful, it is also time-consuming. There were/are some differences of opinion regarding certain aspects of the program—notably whether or not to use the term IPM or just to convey the principles covered by IPM. CCCSD's perspective is that IPM is not a term to use in a sound bite, but is appropriate in more in-depth communication. IPM is a term that is used in many publications and the public should at least be aware that this program is consistent with an IPM approach.

Pest management results, progress in community involvement

As noted above, CCCSD's efforts to communicate about this project have resulted in plans to implement IPM Partnerships with stores throughout the Bay Area. This will increase the project's environmental benefits and increase community involvement.

ATTACHMENTS

- Photo of IPM demonstration garden
- Photos of interpretive signs and information kiosk
- Photos of store displays.
- Fact sheets of the four target pests.
- Project booklet (more information on IPM)
- Store employee training curriculum
- Master Gardener and store employee training notebook
- Workshop flyers
- Photos of training and public workshop
- Photo of box containing workshop materials
- Newspaper article